

Remarks

The specification has been amended by having footnote 3 of Table 1 on page 9 correctly refer to Example 2 instead of Example 3.

The claims have been amended as indicated hereinbelow. The main independent claim 31 has been amended by adding the limitations of dependent claim 32 regarding the alkoxyated fatty amine and by deleting the nitrogen-containing detergent component. Due to the amendment of claim 31, claim 32 has been canceled and claim 33 now depends from claim 31 instead of now-canceled claim 32. New dependent claims 43-45 have been added for a concentrate composition, a fuel composition and a method that includes the nitrogen-containing detergent component which was deleted from claim 31. Claim 39 has been amended to depend from claim 43 instead of claim 31 regarding the nitrogen-containing polyetheramine detergent. Claim 40 has been amended to include the level of pour point depressant present in the concentrate composition. Claim 18 has been amended to correct its wording to that based on original claims 18 and 19. Claim 19 has been amended to indicate that it depends from claim 42 and not from claim 15.

The addition of new claims 43 and 44 is supported by original claims 13 and 17. The addition of new claim 45 is supported by the specification from line 29 of page 8 to line 8 of page 9. Amendment of claim 40 regarding the amount of pour point depressant is supported on lines 24 to 26 of page 5 of the specification.

Claims 15, 18 and 31-39 were rejected under 35 USC 103(a) as being unpatentable for obviousness in view of the combined teachings of Fuentes-Afflick et al. (EP 0947576A1), Schilowitz (US 5,968,211) and Avery et al. (EP 0869163A1).

Fuentes-Afflick et al. disclose a gasoline fuel composition that reduces fuel consumption by employing a combination of 1) an amine that is a hydrocarbyl-substituted amine and/or a poly(oxyalkylene) amine and 2) an ester of a carboxylic acid and a polyhydric alcohol which can have one or more free hydroxyl groups such as glycerol monooleate and dioleate. The hydrocarbyl-substituted amine can be a N,N-di(2-hydroxyethyl) hydrocarbyl-substituted amine, however the hydrocarbyl substituent has a number average molecular weight of about 700 to 3,000 while the hydrocarbyl group of the alkoxyated fatty amine of amended claim 31 of this invention has about 4 to 30 carbon atoms which corresponds to a number average molecular weight of about 57 (4 X 14 per CH₂ group +1 for terminal H) to 421 (30 X 14 per CH₂ group + 1 for terminal H). The poly(oxyalkylene) amines of Fuentes-

Afflick are prepared by condensing a poly(oxyalkylene) compound with an amine or with an amine and a linking reagent whereas the alkoxyated fatty amine of this invention is prepared by condensing a fatty amine with one or more alkylene oxide units which gives products having terminal groups which are different compared to the poly(oxyalkene) amines of Fuentes-Afflick. Fuentes-Afflick et al. do not disclose or suggest the alkoxyated fatty amine of the present invention which is significantly lower in molecular weight.

Schilowitz discloses a gasoline lubricity additive concentrate that remains liquid at low temperatures comprising a fatty acid and/or ester thereof in an aromatic solvent in combination with an alcohol, an amine which can be an alkoxyated alkylamine such as an ethoxyated cocoa alkylamine, or a mixture thereof. Schilowitz does not disclose or suggest the esters of the present invention which contain at least one free hydroxyl group.

Avery et al. disclose a gasoline fuel and a method to reduce friction in the operation of a gasoline engine by using a N,N-bis(hydroxyalkyl) C₈-C₁₈ alkylamine and optionally at least one detergent that can be a polyalkyleneamine, a polyetheramine or a Mannich base. Avery et al. do not disclose the hydroxy-containing esters of the present invention.

Although the combined teachings of Fuentes-Afflick, Schilowitz and Avery appear to disclose the alkoxyated fatty amine and hydroxy-containing ester combination or the alkoxyated fatty amine, hydroxy-containing ester and one or more nitrogen-containing detergent combination of the present invention for use in a gasoline fuel, they do not disclose or suggest the unexpected effectiveness of the present invention in reducing fuel consumption. The Examiner's attention is directed to the Examples of Tables 1-3 on pages 9 and 10. Table 3 contains results of additives run in a lubricant in an oscillating friction wear test which correlates with expected frictional and fuel economy performance of the additives when used in a fuel. The performance of additives run in a lubricant in friction tests generally correlates with their frictional and fuel economy performance when used in fuels as indicated, for example, in Fuentes-Afflick on lines 9-14 of page 11. In Table 3 on page 10 a combination of the ester glycerol monooleate and the amine diethoxyated tallowamine in Examples 7, 9 and 11 was consistently more effective in reducing friction (the coefficient of friction) compared on an equal weight basis to the ester glycerol monooleate in respectively Examples 6, 8 and 10—Example 7 was better than Example 6, Example 9 was better than Example 8, and Example 11 was better than Example 10. When the additive combination of the ester glycerol monooleate and the amine diethoxyated tallowamine was used in a

gasoline fuel in an engine test, there was an improvement in fuel economy as indicated in the Examples 1, 3 and 4 of Tables 1 and 2. When a mixture of two nitrogen-containing detergents, a Mannich base and a polyetheramine, was combined with the ester and amine in a gasoline fuel and run in an engine test in Example 2 of Table 1, the result was a very significant increase in fuel economy from the detergent containing combination of Example 2 compared to Example 1 which contained the ester and amine additives.

Applicants submit that claims 15, 18, 31, 33-39 and new claims 43-45 are patentable over the combined teachings of Fuentes-Afflick, Schilowitz and Avery based on the unexpected performance benefit of the additive combinations of the present invention.

Claims 19 and 40-42 were rejected under 35 USC 103(a) as being unpatentable for obviousness in view of the combined teachings of Fuentes-Afflick, Schilowitz, Avery and Wyman (US 3,250,715).

Wyman discloses, in claims 12-14 and lines 23 to 50 of column 5, a terpolymer made from a dialkyl fumarate, a vinyl ester of a fatty acid and an alkyl vinyl ether which functions to improve flow or pour at low temperatures of a lubricant that comprises a major amount of a lubricating oil where the oil is obtained from refining of petroleum. Wyman also discloses, on lines 51 to 56 of column 5, that the terpolymer can be used in a lubricating oil concentrate from 10 to 80% by weight of the terpolymer where the concentrate can be subsequently diluted with additional lubricating oil to arrive at desired levels for use in a lubricant.

Current claims 40-42 and 19 involve a concentrate composition that contains a solvent that is an aromatic hydrocarbon or a mixture comprising aromatic hydrocarbon and alcohol, an alkoxyated fatty amine, a partial ester of a fatty carboxylic acid and polyhydric alcohol, and a pour point depressant where the pour point depressant is present at 0.001 to 10% by weight. The pour point depressant is present in the concentrate composition to enhance fluidity of the concentrate composition as indicated on lines 15 to 18 of page 5. Of the cited art, only Wyman can be looked to for teachings on the pour point depressant and its use because only Wyman discloses a pour point depressant. Wyman does not disclose or suggest the concentrate of the present invention which contains alcohol and/or aromatic hydrocarbon solvents. Wyman only teaches a concentrate that contains a lubricating oil derived from petroleum. Further, Wyman does not disclose or suggest the concentrate of the present invention which contains a pour point depressant at a low level of 0.001 to 10% to improve flow or fluidity of the concentrate. Wyman teaches a concentrate that contains a terpolymer

Docket No. 3085R
Serial No. 09/820,430
Request for Continued Examination

at a high level of 10 to 80% not to improve fluidity of the concentrate but for subsequent dilution with more lubricating oil to desired levels for use in a lubricant.

Applicants submit that claims 40-42 and 19 are patentable over the combined teachings of Fuentes-Afflick, Schilowitz, Avery and Wyman because, as pointed out above, Wyman does not disclose or suggest the concentrate of the present invention that contains alcohol and/or aromatic solvents and low levels of pour point depressant that functions to improve fluidity of the concentrate. Applicants also submit that claims 40-42 and 19 are patentable over the teachings of this combined art because these claims ultimately depend from claim 31 which applicants submitted above was patentable based on the unexpected performance benefit provided by the composition of claim 31.

Claim 19 was rejected under the second paragraph of 35 USC 112 for being indefinite regarding its dependency.

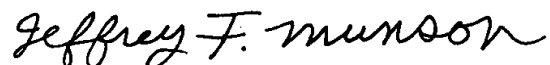
Applicants submit that claim 19 is now definite regarding its dependency since it has been amended to depend from claim 42.

Based on foregoing amendments and remarks, it is submitted that the present claims are in condition for allowance and that the reply to this Office Action is fully responsive. An early and favorable reconsideration is respectfully requested. If the Examiner believes that only minor issues remain to be resolved, a telephone call to the undersigned is suggested.

Any deficiency or overpayment in fees for this application should be charged or credited to Deposit Account No. 12-2275 (The Lubrizol Corporation).

Respectfully submitted,

THE LUBRIZOL CORPORATION



Jeffrey F. Munson
Registration No. 45,705

29400 Lakeland Blvd.
Wickliffe, OH 44092-2298
Telephone No.: 440-347-5028
Facsimile No.: 440-347-1110